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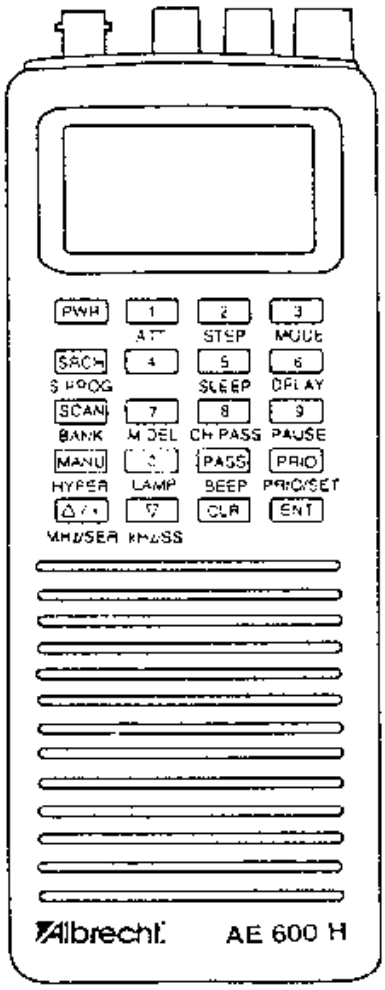
Kommunikationstechnik aus Norddeutschland



WIDE RANGE SCANNING RECEIVER

RECEIVES
WFM / NFM / AM / LSB / USB
MODES

AE 600 H

OPERATING MANUAL

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Thank you for purchasing CAMNIS Brand HSC-200 wide band monitor receiver.

Please read this operating manual to avoid misoperation of the receiver. The HSC-200 is carefully designed but like all receivers HSC-200 suffers from a degree of self-oscillation knows as "birdies". These are from the nature of super heterodyne circuit and are not representing a fault.

NOTE: Where text described in **[SQUARE BRACKETS]** the keys are to be pressed exactly as shows.

For example: **[8] [0] [0] [ENT]**

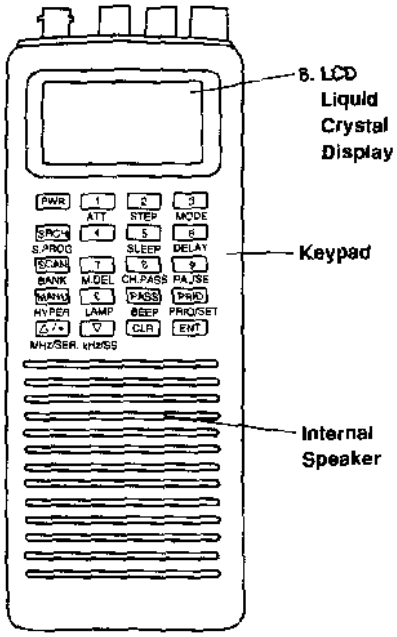
Means press the numeric key 8, followed by the 0 key followed by the 0 key followed by the ENT key .

The arrow keys to the lower left of the keypad are referred to as **UP/DOWN** or **[UP] [DOWN]** keys.

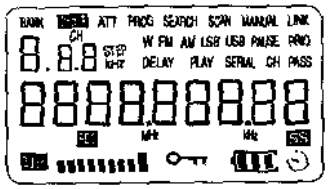
The function key **[2ndF]** provides access to additional facilities via the numeric keypad. This key should be momentarily pressed only before another numeric key is pressed. Do not hold the key in while pressing other keys.

[PWR] Power switch: To turn on HSC-200, press and hold the **[PWR]** key for more than 1.5 seconds. Similarly to turn off the radio, press and hold the power key for more than 1.5 seconds.

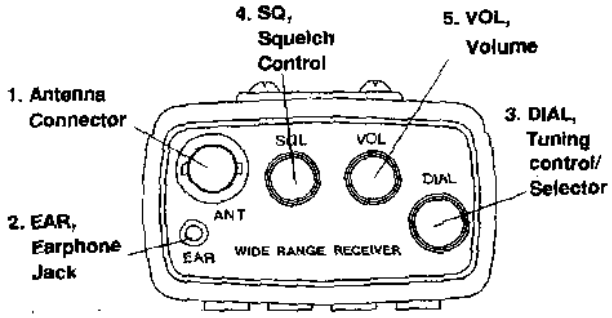
FRONT PANEL



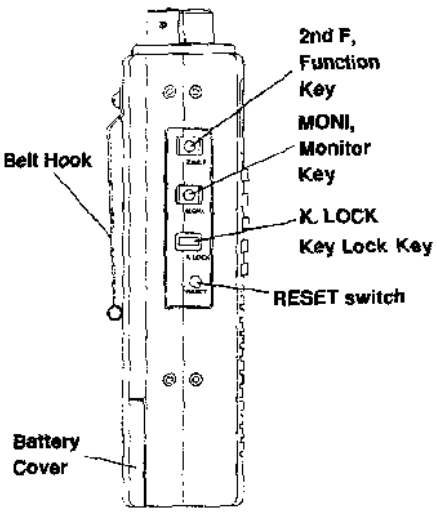
LCD



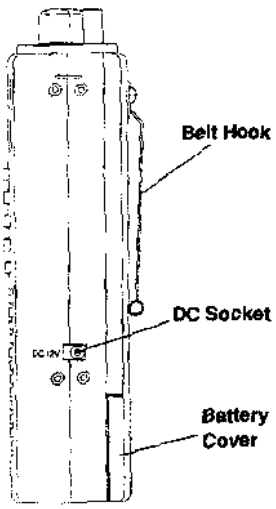
TOP PANEL



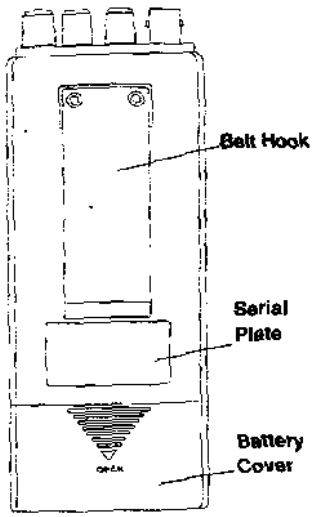
LEFT HAND SIDE



RIGHT HAND SIDE



REAR



Power requirement: HSC-200 can be operated from 1) Ni-Cad. batteries, 2) Dry cell batteries or 3) external DC supply of 9 - 6V DC, 300mA minimum. Always use the supplied charger or regulated DC power supply of 13.8V, 300mA or more using the provided DC connecting lead. The DC input socket is 1.3mm with center positive.

CAUTION: Do not attempt to connect HSC-200 directly to the mains supply.

Very carefully note the polarity of the battery cells. Also never attempt to charge the receiver or connect to an external power source when dry batteries are in the compartment. Always remove dry batteries when they have run down and try not to use the HSC-200 for a period of time and have dry batteries fitted, remove the batteries to avoid leakage.

All memory channel data is stored into internal EEPROM which does not require batteries or connection to external supply. However always turn off the HSC-200 whenever radio is not in use. Particularly turn off the HSC-200 while charging.

Connectors, controls and functions

TOP PANEL

1. **Antenna Connector:** This is high quality BNC 50 ohm unbalanced input. The supplied telescopic antenna should be connected to this input.

2. **EAR, earphone jack:** This is 3.5mm mono socket permits connection to an external earphone, headset or speaker of 8 ohm impedance or greater. When this earphone socket is used, the internal speaker will be automatically muted.

3. **Dial - tuning control/selector:** This dial changes the receiving frequency up and down in selected frequency increment and this dial also operates as a "selector" when entering certain data through LCD menus. Being a mechanical device, it is not uncommon for operations to be occasionally missed and this does not represent a fault.

4. **SQ - squelch control:** The squelch control is used to eliminate unwanted background noise when monitoring a normally inactive frequency. Rotate the control clockwise until background noise just disappears(threshold point), this is the most sensitive setting of the control. In practice the control is usually rotated a little further clockwise beyond the threshold point to prevent the receiver from stopping on noise or very weak signal. If the control is rotated too far clockwise, HSC-200 can only open for very strong signal and weaker signals will be totally lost.

5. **VOL - volume:** When rotated fully clockwise the volume is at maximum, when rotated fully anti-clockwise the volume is reduced to minimum.

FRONT PANEL

6. **LCD (Liquid Crystal Display):** This is to display frequencies, bank and or channel numbers receiving mode, frequency increments and many more status of HSC-200. The lower left corner of the LCD displays a legend "BUSY" to indicate that the squelch is opened. To the right is the signal strength meter presented as a bar graph. The stronger the signal then the larger the graph. It is quite common for a few of the signal meter segments to appear due to back ground band noise even when no signal is present.

[PWR] - power On/Off key: To turn on the radio, press power key and hold for more than 1.5 seconds. To turn off the radio, press power key and hold for more than 1.5 seconds. The **[PWR]** switch is not of a common volume control combined arrangement as a SLEEP timer can also switch the receiver Off when programmed and activated. The K.LOCK - key lock switch located on the left side panel prevents accidental switch On and Off of the receiver.

[SRCH] [S.PROG] - search & search program key:
When the [SRCH] key is first pressed the receiver initiates search mode for one of the programmed search banks.

If no data is stored in the program search banks, the receiver will not be able to search. When [SRCH] is pressed a second time during search, the SEARCH process is canceled and the mode is returned to manual mode where the frequency may be monitored or used as the starting point for manual tuning. To return from SEARCH to MANUAL mode and receive the originally selected manual mode frequency, press **[MANU]**.

The key sequence [2ndF] [SRCH](*short press of the* [SRCH] *key*)
initiates the process for search banks programming.

The key sequence **[2ndF] [SRCH]**(long press of the **[SRCH]** key for more than 1.5 seconds)
initiates the process for linking of search banks.

[SCAN] [BANK] - scan / memory recall / search bank preview key.
When the **[SCAN]** key is pressed briefly, the receiver enters MEMORY RECALL mode, the display legend "BANK" appears on the top left of LCD with bank and channel number. The HSC-200 monitors whatever frequency is displayed on the LCD. The numeric keypad can be used to recall a specific memory channel between 000 - 019, 100 - 149, 200 - 249 etc. up to 949. Alternatively the **UP/DOWN** keys may be used to sequence through **MEMORY CHANNELS WHICH CONTAIN DATA ONLY**, the **[DIAL]** may also be rotated with the same effect.

When [SCAN] is pressed a second time, the receiver returns to **MANUAL** mode and the memory data is transferred to VFO where it may be monitored or used as the starting point to *tune from. To return to* **MANUAL** *mode without transferring the memory contents press* **[MANU]** instead.

When **[SCAN]** is pressed a second time and held for more than 1.5 seconds, the receiver enters scan mode and starts looking for active frequencies in the currently selected memory banks. Alternatively the [UP] or **[DOWN]** keys may be pressed and held for more than 1.5 seconds at this point initiate the scan process.

If a active channel is located, the scan process will wait until the channel clears before continuing. You may force the scan process to continue or reverse in direction by using the **UP/DOWN** keys or **[DIAL]**.

The sequence **[2ndF] [BANK]** (in other words the selection of BANK) has three different effects depending on the operational mode of the receiver at the time the sequence is keyed.

Manual Mode

If the sequence **[2ndF] [BANK]** is keyed in manual mode, the legend "BANK" is displayed on the top left corner of the LCD with a bank number. The bank number represents the current MEMORY BANK where you want data to be stored during memory write, the receiver automatically increments to the first available empty location in the bank selected. Use the **UP/DOWN** keys or **[DIAL]** to select the memory bank starting point for memory write, to accept the selection press **[ENT]**. This sequence is not essential as the bank may always be specified during memory write, however this facility may increase the speed of data entry at critical times when there are plenty of interesting activities to save in the memory bank.

Search mode

If the sequence **[2ndF][BANK]** is keyed in search mode, the legend "BANK" is displayed on LCD with a bank number. The upper and lower limits of search pair are displayed with the legends "HI" and "Lo". Use the **UP/DOWN** key or **[DIAL]** to select the desired program search bank, pressing **[ENT]** or **[CLR]** will have the receiver to search the selected program search bank.

Scan mode

If the sequence **[2ndF] [BANK]** is keyed in scan mode, the legends "BANK" and "CH" are displayed in the left corner of the LCD. The receiver will pause on the currently displayed channel for about 30 seconds before resuming the scan process. The **UP/DOWN** key, **[ENT]** key or **[DIAL]** may be used to force the scan process to resume. The sequence **[2ndF][SCAN]** with the **[SCAN]** key held for more than 1.5 seconds, causes the HSC-200 to enter the scan bank link menu regardless of whether the receiver is in SEARCH, SCAN or MANUAL operational mode.

[MANU] - manual mode.

Pressing the **[MANU]** key places the receiver into a known operational condition ready for data entry. The display legend "MANUAL" appears towards the top right of the LCD. If you are ever unsure what operation mode you are in, press the **[MANU]** key. They key sequence **[2ndF] [MANU]** place HSC-200 into HYPER SEARCH mode.

[UP] /MHz /SER - key.

This is used to enter decimal point during frequency input through the numeric keypad. **[UP]** key may be used to force the receiver to reverse the direction of search or scan. The key will also act as an upward tuning control. The key is also used to select menu options on LCD whenever it is appropriate.

The key sequence **[2ndF]** [UP] places the receiver in ready status to clone data to another HSC-200.

[DOWN]/kHz/SS - key.

The **[DOWN]** key is used as a KHz key during frequency entry and provides an alternative method of frequency entry to the MHz(decimal point) key method. This key may be used to force the receiver to continue search / scan from a active channel and to reverse the direction of search or scan. The key can also act as an downward tuning control. The key is also used to select menu options like [UP] key.

The sequence **[2ndF] [DOWN]** with the down with the DOWN key being held for more than 1.5 seconds places the HSC-200 into **"SS"** (phase inverted audio scrambler) de-scramble *select mode*.

[1][ATT] Numeric 1 / key.

This key acts as a numeric 1 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 1. The sequence **[2ndF]** *[1]* can toggle the attenuator On or Off. The attenuator is useful to reduce interference caused by near by strong signals.

[2][STEP] Numeric 2 / STEP key.

This key acts as a numeric 2 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 2. The sequence **[2ndF] [2]** places HSC-200 into frequency step selection mode.

[3][MODE] Numeric 3 / MODE key.

This key acts as a numeric 3 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 3. The sequence **[2ndF]** [3] places HSC-200 into receiving mode selection mode.

[4][REC/PLAY] Numeric 4 key.

This key acts as a numeric 4 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 4.

[5][SLEEP] Numeric 5 / Sleep key.

This key acts as a numeric 5 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 5. If the sequence **[2ndF] [5]** is keyed the sleep timer is enabled. A clock legend will be displayed on the lower right of the LCD and the receiver will automatically turn off after the programmed duration has elapsed.
To de-active the timer, key the sequence **[2ndF][5]** again, the legend on the LCD will be disappeared.

To program the sleep timer between 1 and 120 minutes in one minute increments key the sequence **[2ndF][5]** with the **[5]** key held for more than 1.5 seconds. The new value may be keyed through the numeric keypad or the UP/DOWN keys may be used or the [DIAL]. To accept the new value press [ENT].

[6][DELAY] Numeric 6 / DELAY key.

This key acts as a numeric 6 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 6. If the sequence **[2ndF] [6]** is keyed, the DELAY (used in search and scan modes) duration can be programmed. The DELAY is the time between the squelch closing and start scanning or searching. The default is 2.0 seconds and the accepted range is between 0.0 and 9.9 seconds. The value maybe changed by keying in a two digit number via the numeric keypad (decimal is automatically entered by the microprocessor) or the UP/DOWN keys or dial may be used to change the value in 0.1 seconds increments.
Press [ENT] to accept new duration value.

[7][M.DEL] Numeric 7 / Memory delete key.

This key acts as a numeric 7 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 7. If the sequence **[2ndF] [7]** is keyed while in memory recall mode or when stopped on a channel during scan, the displayed frequency will be deleted from the memory bank and the HSC-200 will move to the next channel containing data. Memory channels are usually deleted one at a time. It is possible however to delete a selected bank or all banks, this will be explained at later section.

[8][CH.PASS] Numeric 8 / Channel pass key.

This key acts as a numeric 8 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 8. If the sequence **[2ndF] [8]** is keyed during memory recall mode, the legend "CH PASS" will appear on the LCD to indicate that the channel has been locked out so that the channel will be pass over next time. The locked out channel may be recalled and monitored in memory recall mode.

To unlock the locked out channel repeat the key sequence as above described while the desired channel is being displayed.

[9][PAUSE] Numeric 9 / Pause key.

This key acts as a numeric 9 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 9. The sequence **[2ndF] [9]** places HSC-200 into PAUSE mode. The PAUSE is used in search and scan modes and causes HSC-200 to wait for a preprogrammed duration before resuming the search or scan process even if squelch is continuously opened. *To program the* PAUSE *time, key the sequence* **[2ndF][9]** and hold the **[9]** key for more than 1.5 seconds. The default duration is 05 *seconds and available duration range is 01 and 99 seconds. The value may be changed from* keypads, UP/DOWN keys or from dial. Press **[ENT]** to accept new duration.

[0][LAMP] Numeric 0 / Lamp key.

This key acts as a numeric 0 when entering frequencies from keypad. In search, scan and memory modes this key is used to identify bank 0. If the sequence **[2ndF] [0]** is keyed the lamp will be turned on for about 5 seconds. If you touch any of keypads during the 5 seconds HSC-200 set the timer again for 5 second from the last key press so that you can use the lamp as long as you are keying data. If you would like to keep the lamp turning on, press **[2ndF] [0]** with the **[0]** key held for more than 1.5 seconds.

This is useful for base or mobile operation where you are able to keep supplying power source to HSC-200 but consume more power on lamp so will reduce the operation time if running the radio from batteries. To turn off the lamp off, press **[2ndF][0]**

[PASS][BEEP] Frequency pass / beep key.

The pass [PASS] key is used to lockout unwanted frequencies from the programmed search pair schedule. Up to 50 frequencies may be locked out in this way and are held in a list numbered from 00 to 49. To lock out unwanted active frequency, press **[PASS]** when the search process stops on the signal. The frequency is locked out and HSC-200 resumes searching. As HSC-200 does not over write on these 50 pass frequencies, you need to delete some of these pass frequencies when all 50 pass channels are used up and the **[PASS]** key starts failing to respond. To review the list press and hold the **[PASS]** key for more than 1.5 seconds while in manual or search mode. The "CH" and "PASS" will be blinking on LCD. The list may be reviewed from **UP/DOWN** keys or the [DIAL].
A pass frequency may be deleted by first displaying the target frequency in the pass list and keying **[0][ENT]**.

Frequencies may be manually added to the pass list by first displaying the chosen pass channel then keying in a frequency followed by **[ENT]**, the pass list will increment to the next channel. Press **[CLR]** to escape from the list.

The key sequence **[2ndF]**[PASS] toggles On and Off the keypad beep tones.

[PRIO][PRIO/SET] Priority key.

The key is used to select the priority frequency, select sampling duration and toggle the priority function On and Off. The priority frequency is selected in manual mode using the key sequence **[2ndF][PRIO]**, this is refereed to as PRIORITY SET. The priority channel sampling duration is programmed with the key sequence **[2ndF][PRIO]** with the **[PRIO]** key held for more than 1.5 seconds. The range is 01 to 19 seconds and 05 second is default value. The value can be changed from **UP/DOWN** key, the DIAL or by keying in a two digit number from keypads. Press **[ENT]** to accept new value.

[CLR] Clear entry key.

This key will have wrong data entry to be canceled. The **[CLR]** key is also used to escape from the frequency pass menu. A full microprocessor reset can be done by holding both the **[CLR]** and **[ENT]** keys while turning On the unit using the **[PWR]** key. The entire of HSC-200 will be lost. As a result the search and scan facilities will not operate until new data has been programmed. NOTE: It is quite normal for the set to take about 30 seconds to recover from a full reset as all data is being deleted.

[ENT] Enter key.

The enter key is used to finalize the entry of frequency and other data inputs. While in manual mode, press and hold the **[ENT]** key for more than 1.5 seconds to add the currently displayed frequency into memory. While in SEARCH and stopped on a active channel, press the [ENT] key to write the displayed frequency into memory.

The key is also used during a full microprocessor reset.

Left hand side keys

[2ndF] function key.

The second function key is used to access the second key functions as listed underneath the keypad keys.

[MONI] monitor key.

This is used to open the squelch to monitor very weak signals.

[K.LOCK] key lock key.

This 2 position slide key is to prevent accidental operation of the keypad. At down position, the keylock is OFF. When the switch is slide upward, the keylock is On and key graphical legend is displayed on LCD and all the keypads and dial is disabled(except for the [MONI] key).

RESET switch.

You may soft reset the microprocessor of HSC-200 by momentarily pressing this reset key on the left hand housing of HSC-200 using a pin, small screwdriver or sharp pencil. Your memory bank and search bank data will remain but any linked bank setting will be lost. This has the same effect as turning the receiver On by the **[PWR]** key while holding the [CLR] key.

Right Hand side of housing

DC 12V charging/external power connection.
This is 1.3mm DC socket with center positive. The socket is used to charge the internal Ni-Cad. batteries using the supplied charger. HSC-200 may also be connected to an external 12V DC supply such as DC 12V cigarette lighter plug of vehicle by using DC leads. The HSC-200 may also be connected to separate regulated DC power supply of 12V to 13.8V DC with 300mA or higher supply current.

Rear cabinet

Battery compartment.
The compartment is for AA size battery x 4pcs. Carefully note the polarity (direction of positive side and negative side of batteries). Either the supplied rechargeable Ni-Cad. batteries or high quality dry cell batteries may be used.

CAUTION: Never attempt to charge the receiver or connect to an external power source when dry cell batteries are fitted in the compartment. Always remove dry cell batteries when they are running down.

Basic Manual Operation of the receiver

Entering a frequency through the keypad - VFO (MANUAL) MODE

To place HSC-200 into manual mode, press **[MANU]** key. The HSC-200 enters manual mode ready for input of a frequency or other data. The receiver can also be tuned by **[DIAL]**.

Example of frequency entry 144.600MHz.

Press **[1] [4]** [4] **[.] [6]** [0] [0] **[ENT]**

Example of round number such as 118.000MHz.

Press **[1] [1] [8] [ENT]**

If you want cancel entered number(before pressing [ENT] key), press [CLR] before completing the input with [ENT].

Example of frequency enter 945KHz (0.945MHz).

Press [0] [MHz] [9] [4] [5] [ENT] MHz input.
Press [9] [4] [5] [KHz] [ENT] KHz input.

945KHz is equal to 0.945MHz and data may be entered in either method.

Example of frequency enter 1215KHz (1.215MHz)

Press [1] [2] [1] [5] [KHz] [ENT].

1215KHz is equal to 1.215MHz.

CAUTION: If the frequency display changes when the [ENT] key is pressed, then an inappropriate step has been selected. The displayed frequency must be exactly divisible by the step size.

The speed at which the receiver increments up or down depends on the step size which is default to PROG (automatically set from the lookup table). It is possible to override the program default using the [STEP] key. Following step size are available.

NFM/AM/LSB/USB mode: 10Hz, 50Hz, 100Hz, 500Hz, 1KHz, 5KHz, 6.25KHz, 9KHz, 10KHz
12.5KHz, 20KHz, 25KHz, 30KHz, 50KHz, 100KHz

WFM: 5KHz, 6.25KHz, 9KHz, 10KHz, 12.5KHz, 20KHz, 25KHz, 30KHz, 50KHz, 100KHz

HSC-200 has been factory pre-programmed with all the bandplan data so that the radio is able to automatically select the appropriate step size and mode for the frequency selected.

The pre-programmed step size may be manually overridden so you may choose alternative settings at will or when bandplans are renewed.

To change default step size press **[2ndF]** **[2]**, "STEP KHz" will be blinking on the LCD to indicate HSC-200 is ready for step size change.

Use the UP/DOWN keys or **[DIAL]** to change the step size selection which is displayed to the left of the blinking "STEP KHz". When you have made the new selection, press **[ENT]** to accept the selection. If you choose not to change the size, press **[CLR]** key.

To change default mode press **[2ndF]** **[3]**. The modes may be accessed in order: "PROG WFM FM AM", "PROG" refers to PROGRAM MODE. When "PROG" is selected, the receive mode and step size will be selected automatically using the pre-programmed HSC-200 bandplan data and FM is in fact NFM (narrow band FM). The currently selected mode will be flashing on the LCD to indicate that a new mode input is expected. Use UP/DOWN keys or **[DIAL]** to make a selection followed by **[ENT]** key to complete the selection.

Any receiving mode can be selected for entire frequency coverage of the HSC-200.

Attenuator ON/OFF

10dB attenuator is available to reduce the possible effects of signal overloading due to connection to an external antenna or when the HSC-200 is used in nearby strong signal transmitter such as FM or TV broadcasting station. To toggle the attenuator ON/OFF in manual mode press **[2ndF]** **[1]** the "ATT" on LCD confirms selection and incoming signal will be reduced by 10dB. To toggle ON/OFF again just repeat the sequence **[2ndF]** **[1]**, the "ATT" display is disappeared from the LCD when the attenuator is OFF. The attenuator status can be programmed into memory channels and when defining program search.

Memory banks and channels

For example, to enter the frequency of 88.6MHz with the attenuator off into memory bank "0" channel "00" (0 0 0) in manual mode.

Press **[MANU]** to place the HSC-200 into MANUAL mode.

Press **[8]** **[8]** **[.]** **[6]** **[ENT]** to select the desired frequency, the mode and step size will be automatically selected by the HSC-200.

Press and hold the **[ENT]** key for more than 1.5 seconds to enter memory input mode.

"BANK" and "CH" will appear on the LCD and start blinking to indicate that memory writing is in progress. The first available empty memory bank and channel number will be shown on LCD along with an alternating "_ _ _ _" display and frequency to show that no data is currently stored in the memory location.

To select "BANK 0" "CHANNEL 00", press [0] [0] [0] alternatively the UP/DOWN keys will allow selection of BANK and the [DIAL] will allow selection of channel number. If data is already stored in "0 0 0", the existing frequency will be alternatively displayed along with the new frequency to be stored... this is a warning just in case you are about to overwrite important memory data.

Press [ENT] to write the new data to memory "0 0 0". The frequency, mode, channel step and attenuator status will be stored.

If you would like to use alternative bank, press **[2ndF] [SCAN]**(the second function labeled as BANK). Use the UP/DOWN keys, *[DIAL] or numeric keypad to select an alternative bank then* press **[ENT]**.

Recalling memorized channel data

For example to recall the frequency of 88.6MHz which has been stored into "0 0 0" during the above example, press **[SCAN]** to place the receiver into recall mode. "BANK" and "CH" appears on the top left of the LCD.

The receiver will display a memory channel, mode and frequency. To recall memory channel "0 0 0" in recall mode, type [0] [0] [0] there is no need to press **[ENT]**.

To make the memory channel tunable by [DIAL] or UP/DOWN key, press **[SCAN]**. The transferred frequency may be tuned. The tuning step will have also been transferred from memory along with mode.

Memory channel management.

The easiest way to change the memory channel contents is simply to key new data over the top. Or the *memory channel contents can be deleted completely. Once you have deleted memory* channel and memory bank data it can not be restored. Follow the key sequence very carefully.

If the [2ndF] [7] keys are pressed in the sequence while in memory recall mode or when stopped on an active channel during scan mode, the displayed frequency will be deleted from the memory bank and the set will move on to the next memory channel containing data.

It is only possible **DELETE ALL THE MEMORY DATA FROM A SPECIFIC BANK** by first selecting the memory bank(using [2ndF] [SCAN] [DIAL] [ENT] while in manual mode, turning the receiver off, then turning the receiver on again while holding the [7] key.

A full microprocessor resct can be done by holding both the [CLR] and [ENT] keys while turning on the radio using the [PWR] key. All memory channels, search banks, pass channels and other information will be lost and blank. As a result the search and scan facilities will not operate until new data has been entered. NOTE: It is quite normal for the set to take about 30 seconds to recover from a FULL reset as all data has to be deleted!!!

Priority function

The priority function enables you to keep on scanning, searching or monitoring while HSC-200 samples a special frequency(priority channel) every five seconds(default value) to see if it is active.

Storing data into the priority channel.

The [PRIO] key is used to set up the priority frequency, program the sampling interval and toggle the function on and off.

Example: To set the frequency 144.500MHz as the priority channel.

Make sure that the HSC-200 is in manual mode by reviewing "MANUAL" is displayed o the LCD. If not, press [MANU] key.

Enter the required frequency [1] [4] [4] [MHz] [5] [ENT]

And [2ndF] [PRIO] to set up 144.5MHz as priority channel.

To toggle the function on and off, press **[PRIO]**, a "PRIO" legend appears on the LCD to indicate the priority function is On. The default value of priority interval is 5 seconds. The sampling interval can be programmed in the rage between 01(1 second) to 09(9 seconds). Press **[2ndF] [PRIO]** keys in the sequence with the **[PRIO]** key held for more than 1.5 seconds. The sampling interval can be changed in one second increments by using the UP/DOWN keys or **[DIAL]** or by keying in a two digit number via the numeric keypad. The new value is accepted by pressing **[ENT]**.

Scanning stored memory channels and banks

There are two different ways to start scanning HSC-200.

1) From "MANUAL" or "SEARCH" modes:
Press [SCAN] to place HSC-200 into "MEMORY RECALL" mode and press [SCAN] again and hold the key for more than 1.5 seconds to start actual scanning functions. *Alternatively, the UP/DOWN key may take the place of the second [SCAN] key press.*

2) From "*MEMORY RECALL*" mode:
Press [SCAN] once holding the key for more than 1.5 seconds to initiate the scan process. Alternatively, the UP/DOWN key may take the place of the [SCAN] key press.

HSC-200 can scan single memory bank or scan linked memory banks. To scan single memory bank, simply press the numeric key for the bank number and **[UP]** or **[DOWN]** key to determine the direction of scanning.

For example, to select memory bank "1", press [1] **[UP]** or **[DOWN]**. The bank number "1" will be displayed on the left of LCD and memory bank "1" will be scanned.

At the time of shipment, the all memory banks are unlinked and therefore the HSC-200 can only scan individual memory bank by selecting the scan as explained as above.

To link memory banks for scanning, "SCAN LINK" menu is used. To access the menu use *the key sequence **[2ndF] [SCAN]** with the **[SCAN]** key held for more than 1.5 seconds.*

The top left corner of the LCD will show the legend "oF" or "on"(OFF or ON) depending on the bank link status. To toggle the status, rotate the **[DIAL]** the legend will toggle appropriately. To add more banks to the bank link list simply press the appropriate identifying scan bank number using the numeric keypad, the number legends will toggle On and Off. To accept new link list and setting, press **[ENT]**.

NOTE: It is possible to scan a memory bank which is not listed on the bank link list. To scan any deselected bank simply key the desired identifying bank number through the keypad and press either the **[UP]** or **[DOWN]** key.

Lock out the channel not of current interest

Memory scan channels may be locked out either when the receiver stops in scan mode or by recalling them in memory recall mode. To lock out a channel, wait for the channel to become active then press **[2ndF] [8]** or recall the channel and press **[2ndF] [8]**. The legend "CH PASS" will be added to the memory channel in very quick manner. If you recall the locked out channel "CH PASS" legend can be seen clearly .

To unlock the locked out channel, press **[2ndF] [8]** from memory recall mode. "CH PASS" legend is to be disappeared to indicate that the channel can be scanned from next scanning session.

Delay and Pause function

There are two user programmable timers such as delay time and pause time.

DELAY time: The DELAY is the duration time between squelch closing and resuming search or scan. The DELAY is useful for customizing how long the receiver will wait for resuming search or scan after the receiver is closing squelch. As there maybe certain time duration in simplex point to point communications, if the DELAY timer set long enough to hold the receiving mode, the HSC-200 stops on active channel or frequency and stays for the set duration even after signal disappears so that the receiver can keep monitoring the channel or frequency for another incoming signals.

Press [2ndF] [6] to change the delay time. The legend "SEARCH SCAN" appears on the top of the LCD with the blinking legend "DELAY", 2.0 at default number will be 2.0(2 seconds). The value may be changed by keying in a two digit number from numeric keypads or UP/DOWN key or [DIAL] in the range of 00(no delay) to 9.9(9.9 seconds). Press [ENT] to confirm new value.

PAUSE time: The pause parameter determines how long the receiver will remain on "active" channel before resuming scanning channels or searching. The limit range is 01 to 99 seconds with the default value of 05. It is also possible to switch PAUSE OFF.

To activate PAUSE timer on, press [2ndF] [9] and "PAUSE" legend will be displayed on the LCD. To toggle the pause function to off repeat the key sequence [2ndF] [9].

To program the pause delay time, *key the sequence [2ndF] [9] and hold the [9] key for* more than 1.5 seconds. The value of the timer may be changed by numeric keys, UP/DOWN *keys or [DIAL]. Press [ENT] to accept the new value.*

Search

The SEARCH is the function to look for active signals on all frequencies between programmed lower frequency limit and upper frequency limit in selected step size and mode in an upward or downward direction. There are 3 different search modes such as 1) manual search, 2) automatic single bank search, 3) automatic linked banks search.

Manual Search

For example, to search manually from 145.000MIIz, press [1] [4] [5] [MHz] [ENT] in manual mode and then press and hold the [UP] key for more than 1.5 seconds. The search process takes place from the displayed frequency using the receive mode and step size displayed. If the default mode of PROGRAM has been selected, the receive mode and channel step will change automatically depending on factory programmed bandplan data.

To reverse the direction of manual search, use [DIAL] or UP/DOWN keys.

To move on from active frequencies, use [DIAL] or UP/DOWN keys.

To cancel manual search and place HSC-200 into manual mode, press **[MANU]** key. The current frequency on the LCD can be monitored in manual mode or can be tuned by using **[DIAL]** or **UP/DOWN** keys.

To store active frequency found during the manual search for future monitoring purpose. Press and hold the **[ENT]** for more than 1.5 seconds to place HSC-200 into memory writing mode.

The legend "BANK" and "CH" on the LCD are prompting to enter bank number and channel number. The first available empty memory bank and memory channel will be automatically offered. If you like to use the memory location to store the active frequency found, simply press **[ENT]** . If you would rather like to use other memory locations, choose a new memory location using the UP/DOWN keys or [DIAL]. Press **[ENT]** to write the data to the memory location. .

Lock out unwanted active frequencies.

There are 50 channels storage area available for locking out unwanted active frequencies found while searching.

While searching HSC-200, you may encounter spurious frequencies or self oscillation frequencies from HSC-200 known as birdies or continuous digital burst signals. Obviously, you do not want to stop at these signal over and over again. As soon as squelch is opened on these signal, you simply press **[PASS]** key. The frequency will be automatically entered into the first available PASS CHANNEL and HSC-200 will continue to search once again.

Next time you search that frequency, even if that frequency is active, HSC-200 is not going to open the squelch and therefore HSC-200 passes over that locked out frequency.

If the HSC-200 fails to respond to the **[PASS]** key then all 50 PASS channels have probably been used up and you will need to delete some in order to make more storage channel.

To review the pass channel list, press and hold the **[PASS]** key for more than 1.5 seconds while in MANUAL or SEARCH mode to show the first frequency in the list along with pass channel number "00". The list may be reviewed using UP/DOWN keys or [DIAL].

Unlock the locked out frequencies.

A pass frequency may be deleted by first displaying the selected frequency in the list then keying [0] [ENT]. It is also possible to delete the entire list in one shot. Turn off the radio first and turn on the radio while holding both the **[PWR]** key and [8] keys for more than 1.5 seconds. Release both keys and the display will remain blank for about half a second or so and the receiver power on with deleting the entire pass channel list.

Program search pair frequencies into search banks.

AE 600 H Preprogrammed Frequency Bands

1	26.565 – 27.405	CB- Radio	5 kHz
2	84.005 – 87.250	4 m Band FM	5 kHz
3	118 – 136	Air Band AM	25 kHz
4	144 – 146	2 m Amateur Radio FM	12.5 kHz
5	430 – 440	70 cm Amateur Radio FM	25 kHz
6	433.05 – 434.775	LPD UHF Band FM	12.5 kHz
7	156.0 – 162.05	VHF Marine-Band FM	25 kHz
8	885.0125 - 887.0125	Cordless Phones FM	12.5 kHz
9	930.0125 - 932.0125	Cordless Phones FM	12.5 kHz
0	87.5 - 107.95	FM Broadcast WFM	50 kHz

To search one of these preprogrammed search banks, simply press **[SRCH]** and press select one of these bank identifier number by pressing numeric key corresponding to the bank identifier. For example to search bank 3 search pair, press [3] while in search mode.

To review the upper and lower frequency limits, in search mode, press **[2ndF] [SCAN]** to review the search pair. **UP/DOWN** keys or **[DIAL]** can be used to review other pairs. To return to program search mode, press **[ENT]** or the receiver will return to program search mode automatically after about 30 seconds. Alternatively should you like to return to a different program search bank, press a numeric key corresponding to the search bank required (no **[ENT]** is required).

It is very easy to customize the preprogrammed search pairs for your own and specific needs.

Example of reprogramming a search bank - "1" to the following parameters:

Lower limit frequency	400.000MHz
Upper limit frequency	410.000MHz
Receive mode	FM (Narrow FM)
Step size	25KHz increment
Attenuator	OFF

Press:	**[2ndF] [SRCH]**	SEARCH" legend start blinking.
	[5] [ENT]	To select search bank where new pair is to be programmed.
Rotate:	**[DIAL]**	Until "FM" legend is selected on the LCD
Press:	**[ENT]**	To accept narrow FM mode.
Rotate:	[DIAL]	Until 25KHz is selected on the LCD.
Press	**[ENT]**	To accept 25KHz increment.
Rotate:	[DIAL]	Until "oFF" legend is displayed.
Press:	**[ENT]**	To accept attenuator turning OFF.

Press: [4] [0] [0] **[MHz]** To program lower frequency limit of 400.000MHz.

Press: **[ENT]** To accept 400.000MHz as lower frequency limit.

Press: [4] [1] [0] **[MHz]** To program upper frequency limit of 410.000MHz

Press: **[ENT]** To accept 410.000MHz as upper limit of 410.000MHz.

The re-programming is now completed and the receiver will be in program search mode and will start searching new active frequencies.

Linking programmed search banks

HSC-200 can link all search banks to search entire linked search banks schedule. "SEARCH LINK" menu may be displayed by pressing **[2ndF] [SRCH]** with **[SRCH]** key held for more than 1.5 seconds.

The top left corner of the LCD will show "oF" or "on" to indicate if the link function is on or off. To toggle the selection of bank link status, rotate the **[DIAL]** to select appropriate status. To add more banks to the list, press the appropriate search bank identifiers using the numeric keypad, the number legends will toggle On and Off. The legend "-" indicates the bank is unselected. To accept the new list and setting press **[ENT]** key.

Now when searching HSC-200 with bank link status on, a group of search banks will be searched through. If so desired, any banks not on the link schedule can be search by pressing the desired identifying bank number from the keypad while in search mode. Only the search bank manually selected will be searched.

HYPER SEARCH

HSC-200 has very unique feature such as HYPER SEARCH. HYPER SEARCH is very high speed search to sweep 500MHz bandwidth in only 12 seconds. This HYPER SEARCH can only lock onto nearby strong signal such as wireless tapping transmitter. The active frequencies found during the search can be stored to the memory channel. Maximum 50 frequencies not of current interest can be locked out for HYPER SEARCH mode and these 50 lock out capacity is exclusively for the mode and it is independent of 50 lock out capacity for normal search mode.

In HYPER SEARCH mode, one of following 4 present banks can be searched in about 12 second.

Bank 1	22.5MHz	-	470MHz
Bank 2	470MHz	-	1013MHz
Bank 3	1013MHz	-	1570MHz
Bank 4	1570MHz	-	2059MHz

1. To activate HYPER SEARCH mode , press [2ndF][MANU]. And HYPEr legend is displayed on LCI
2. To select one of above HYPER SEARCH banks, press numeric key [1] through [4].
3. As soon as IISC-200 locks on strong signal, the frequency of active signal is displayed on LCD.
4. If you would like to lock the frequency out, press [PASS] key.
5. If you would like to memory the frequency to memory channel, press [ENT] and refer page 13.
6. If you would like to resume the search, press UP/DOWN key or rotate the dial in the direction you like to advance the HYPER SEARCH.

SUGGESTIONS: Rotate squelch control in fully clockwise which protect HSC-200 from frequent squelch opening at strong signals such as FM broadcasting, TV signal and others. If it is necessary, use attenuator ([2ndF] [1]).

Sleep Timer

HSC-200 may be turned off after a prescribed time period. To enable the sleep timer, press [2ndF] [5]. A clock legend will be on the lower right of the LCD. The receiver will automatically turned off after the default duration of 60 minutes. To de-activate the timer, press [2ndF] [5] again and confirm the clock legend is to be disappeared from the LCD.
The sleep time duration may be programmed between 1 to 120 minutes in one minutes increments. Press [2ndF] [5] with the [5] key held for more than 1.5 seconds. The new value may be keyed through the numeric keypad, or UP/DOWN keys or [DIAL]. To accept new duration, press [ENT].

Cloning data between two HSC-200

It is possible to duplicate all data from one HSC-200 to another HSC-200. The optional adapter and interface is required. Please refer to the manual of these adapter and interface for the detailed information.

Remote control using a personal computer through RS232C interface

HSC-200 is capable of remote control using computer such as IBM PC compatible and control software. An adapter and external interface are optional accessories. Please refer to the manual of the accessory package.

Specifications

Frequency coverage	100KHz - 2059MHz continuous
Receive modes	NFM, WFM, AM, LSB, USB
Sensitivity, 0.53 - 2.0MHz	AM 10uV
Sensitivity, 2.00 - 10.0MHz	AM 12uV
Sensitivity, 10.00 - 400MHz	NFM 0.5uV @12dB SINAD AM 0.8uV @10dB S/N WFM 6.0uV @30dB S/N
Sensitivity, 400-1000MHz	NFM 0.7uV @12dB SINAD WFM 6.0uV @30dB S/N
Sensitivity, 1000-1300MHz	NFM 1.5uV@12dB SINAD
Frequency increment - AM and NFM	10Hz, 50Hz, 100Hz, 500Hz 1KHz, 5KHz, 6.25KHz, 9KHz, 10KHz, 12.5KHz, 20KHz 25KHz, 30KHz, 50KHz, 100KHz
Frequency increment - WFM	5KHz, 6.25KHz, 9KHz, 10KHz, 12.5KHz, 20KHz 25KHz, 30KHz, 50KHz, 100KHz
Memory channels	50 CH/bank x 10 banks, total 500 CH
Search banks	10 banks
Search lock out	50 channels
Scan speed	30 channels/sec.
HYPER SEARCH speed	12 second for 500MHz bandwidth
Priority channel	1 channel
Antenna connector	50 ohm unbalanced BNC connector
Audio output	110mW - 10%THD into 8 ohm @6V
Power requirements	4.8V from 4 x AA internal Ni-Cad. batteries 6.0V from 4 x AA manganese or alkaline batteries 9.0-16.0V from external
Current drain	95mA squelched
Size	64W x 153H x 39D mm, 310 gram including Ni-Cad.